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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
9795.04/PC/PC		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/IB2004/001201	05.04.2004	09.04.2003
International Patent Classification (IPC) or both national classification and IPC		
A47J31/44		
Applicant		
RANCILIO MACCHINE PER CAFFE' S.P.A. et Al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
03.11.2004	22.07.2005
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Van Bastelaere, T Telephone No. +31 70 340-4602

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IB2004/001201

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1, 3-11	as originally filed
2, 2a	received on 03.11.2004 with letter of 02.11.2004

Claims, Numbers

1-12	received on 03.11.2004 with letter of 02.11.2004

Drawings, Sheets

1/3-3/3	as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-12
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-12
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-12
	No:	Claims	

2. Citations and explanations

see separate sheet

0. Reference is made to the following document:
D1: EP-A-1 294 263 (RANCILIO MACCHINE CAFFE) 26 March 2003 (2003-03-26)

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1. 1.1 D1, which is considered to represent the closest prior art discloses (see paragraphs 20-27, claims 1, 15 and 16 and figures 1-5) a steam automatic dispensing device for preparing hot and/or frothed drinks (automatic device for heating and frothing a liquid), comprising :
- a first duct for introducing steam inside said drink (means 6 for introducing steam);
-a second duct for introducing air inside said drink (second tube 7 for introducing air);
-an electronic control unit for controlling the introduction of steam and/or air(means 5 for controlling the steam flow) through said first and second duct, said control unit being programmable to carry out a predetermined control cycle depending on the desired drink to be obtained (see paragraph 27) and electromechanical means for controlling (electrical valve not shown, see paragraph 27) the introduction of steam and/or air through said ducts and said electromechanical means being operated by said electronic unit

1.2 from which the subject-matter of claim 1 differs in that said electromechanical means comprise a corresponding electrovalve for each of said first and second duct for controlling the introduction of steam and/or air through said ducts and in that a first of said two electrovalves is a three-way electrovalve, a first way being connected to said second duct, a second way being connected to an air introducing pipe and a third way being connected to a steam dispensing pipe.

1.3 The problem to be solved by the present invention may be regarded as how to control the steam and/or air independently to make diverse beverages

1.4 To have a three-way electrovalve connected to said second duct, air introducing pipe and steam dispensing pipe is a feature which is not disclosed nor hinted by D1. Including this feature, needs a complete new design/construction of the steam dispensing device, so that it is not obvious to come to this conclusion.

Hence, the subject-matter of claim 1 does involve an inventive step (Art. 33(3)

PCT).

the obtained product independent from the operator is the subject of the international patent application WO 01/97668, in the name of the applicant. Such patent application discloses a device essentially consisting of a container within which milk to be heated and to be frothed can be poured, inside which are provided a first duct for introducing steam in milk and a second duct, joined to said first duct, for introducing in milk the air needed for producing froth. The duct for steam dispensing is provided with a radial opening for the exit of steam and the duct for air ends with an axial opening placed in front of said radial opening of the steam duct. This way, the steam dispensing from said radial opening produces a depression that in its turn causes the air suction through the corresponding duct, the steam effusion velocity generates a turbulence at the bottom of milk causing that it is heated and mixed with air and a milk-air-steam mixture is therefore produced directly inside milk, with consequent froth formation.

However effective, the device above illustrated proves to be not much versatile, because it always provides the production of a milk-air-steam mixture and it makes impossible, for instance, the production of hot milk without froth.

INSERT PAGE <2A>

It is the main object of the present invention to

<2A>

Other devices using steam for heating drinks or food are respectively described in the documents US 6,099,878 and FR 2 824 249.

US 6,099,878 discloses a fully automatic, milk inclusive espresso coffee machine which includes coffee bean grinding and brewing apparatus and a milk aeration system which pumps a selection of milk from an internal refrigerator through a choice of aeration processes to a steaming apparatus for heating and further conditioning the milk for joining the brewed coffee liquor. With each beverage production cycle all milk is hygienically either served or returned to its refrigerated reservoir. A process is disclosed which includes pumping milk, all in a refrigerated environment, selectively along a plurality of milk lines one of which may inject air for foaming the milk to a steam delivery line for heating and steaming it and delivering it to a beverage cup. After the desired amount of milk has been delivered, the steam flow continues momentarily to cleanse the line of residual milk.

FR 2 824 249 discloses a device for heating food comprising a temperature measurement rod including an agitator section with steam outlets and temperature sensor. A handle is used for stirring. The steam generator feeds the outlets through a flexible tube connected to the rod. An electrical controller is wired to the sensor and steam generator and/or a display unit.

CLAIMS

1. A steam automatic dispensing device for preparing hot and/or frothed drinks, comprising:

- a first duct (13) for introducing steam inside said drink;
- a second duct (15) for introducing air inside said drink;
- an electronic control unit (51) for controlling the introduction of steam and/or air through said first and second duct, said control unit being programmable to carry out a predetermined control cycle depending on the desired drink to be obtained, said first and second duct being provided with electromechanical means for controlling the introduction of steam and/or air through said ducts and said electromechanical means being operated by said electronic control unit,

characterised in that said electromechanical means comprise a corresponding electrovalve for each of said first and second duct for controlling the introduction of steam and/or air through said ducts and in that a first of said two electrovalves (14, 16) is a three-way electrovalve, a first way being connected to said second duct (15), a second way being connected to an air introducing pipe (33) and a third way being connected to a steam dispensing pipe (31; 37).

~~third way being connected to a steam dispensing pipe (31; 37).~~

2 ~~8~~. A device according to claim 1, wherein a second of said two electrovalves (14, 16) is a three-way electrovalve, a first way being connected to said first duct (13), a second way being connected to a steam dispensing pipe (29) and a third way being connected to said third way of said first three-way electrovalve (16) through an intermediate pipe (31).

3 ~~9~~. A device according to claim 1, wherein a second of said two electrovalves (14, 16) is a three-way electrovalve, a first way being connected to said first duct (13), a second way being connected to a steam dispensing pipe (29) and a third way being connected to a pipe (39) open to the outside.

4 ~~1~~. A device according to claim 1, wherein said first duct (13) has the end (13a), fit for being immersed in said drink, closed and it is provided with a radial hole (17) near said end.

5 ~~8~~. A device according to claim 4, wherein the end (19), fit for being immersed in said drink, of said second duct (15) is provided with an axial opening (21) placed so to be in front of said radial hole (17) of said first duct (13).

6 ~~9~~. A device according to claim 1, wherein said electronic control unit (51) comprises a microprocessor (55), provided

with a storage (57) within which the instructions relevant to an opening and closing cycle of said electrovalves (14, 16) are stored, said microprocessor controlling opening and closing of said electrovalves on the basis of said instructions.

7 10. A device according to claim 6, wherein said storage (57) contains the instructions relevant to the carrying out of a plurality of opening and closing cycles of said electrovalves and wherein said electronic control unit comprises a selector (53) to select the wanted cycle.

8 11. A device according to claim 7, wherein it is further provided a temperature electronic probe (23) fit for being immersed in said drink, whose temperature-indicative signal is processed by said microprocessor (55) for controlling opening and closing of said electrovalves (14, 16).

9 12. A device according to claim 7, wherein said opening and closing cycle provides a first step (I) wherein steam is introduced simultaneously through both said first and second duct (13, 15) and the introduction of air is prevented, a second step (II) wherein steam is introduced through said first duct and air is introduced through said second duct and a third step (III) wherein steam is introduced simultaneously through both said first and second duct (13, 15) and the introduction of air is prevented.

10 13. A device according to claim 9, wherein said first (I),

second (II) and third step (III) have a preset duration.

11 ~~14~~. A device according to claim ~~11~~ 8 and ~~12~~ 9, wherein the duration of said first (I), second (II) and third (III) step depends on the temperature signal coming from said temperature probe (23).

12 ~~13~~. A device according to anyone of the preceding claims, further comprising a container (11) suitable for containing said drink, said first and second duct (13, 15) being fastened to said container.

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